

In re Application of:  
Yamakawa et al.  
Application No.: 10/749,532  
Filed: December 30, 2003  
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PATENT  
Atty Docket No.: INTEL1110(P15140)

### **AMENDMENTS TO THE CLAIMS**

Please amend claims 1-6, 10-12, and 15-19, cancel claims 8, 9, 13, and 14, and add new claims 32-36, as set forth below. The current listing of claims replaces all prior listings.

1. (Currently Amended) A method for identifying a peptide that binds to a surface having a target geometrical shape, comprising:

a[b]) contacting [the] a first solid surface comprising a self-assembled surfactant monolayer and [having the] comprising a first [target] geometrical shape[,] with a phage display library under reaction conditions, wherein the phage express an exogenous peptide; [and]

b) contacting a second solid surface comprising the self-assembled surfactant monolayer and comprising a second geometrical shape with phage that bind to the first surface, wherein phage that bind to the second surface are excluded, and wherein the non-binding phage are re-contacted with the first surface;

c) repeating step (b); and

d[c]) identifying a peptide[s] that binds to the first surface and not the second surface [having the target geometrical shape],

wherein the peptide of step (d) discriminates between the surfactant monolayer and the first geometrical shape.

2. (Currently Amended) The method of claim 1, wherein the target geometrical shape of the first solid surface is a flat surface and the geometrical shape of the second solid surface is a smooth or curved surface.

3. (Currently Amended) The method of claim 1, wherein the geometrical shape of the first solid surface is a smooth[,] or curved surface and the geometrical shape of the second solid surface is flat.

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4. (Currently Amended) The method of claim 1, wherein [the] at least one of the first or second surfaces is hydrophobic.

5. (Currently Amended) The method of claim 1, wherein ~~at least three rounds of biopanning are performed by repeating the contacting, identifying, and amplifying step (c) is repeated~~ at least three times.

6. (Currently Amended) The method of claim 5, wherein during each successive round of step (c) biopanning, the reaction conditions are more stringent than the prior round.

7. (Original) The method of claim 1, further comprising amplifying the phage using a sloppy amplification reaction.

8. (Canceled)

9. (Canceled)

10. (Currently Amended) The method of claim 1, wherein the first or second surface is a substrate for scanning probe microscopy.

11. (Currently Amended) The method of claim 1, wherein the first or second surface comprises graphite.

12. (Currently Amended) The method of claim 11, wherein the first or second surface comprises highly ordered pyrolytic graphite.

13. (Canceled)

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14. (Canceled)

15. (Currently Amended) The method of claim 1, wherein the [flat] first or second surface is flat, [or] smooth, or curved, and wherein the first or second surface comprises boron nitrate, lead sulfide, zinc selenide, cadmium selenide, cadmium sulfide, gallium arsenide, aluminum arsenide, zinc sulfide, gallium nitrate, indium phosphate, or gallium arsenide.

16. (Currently Amended) The method of claim 1, wherein the first or second surface comprises mica, silicon, or annealed gold.

17. (Currently Amended) The method of claim 1, wherein the first or second surface comprises Teflon.

18. (Currently Amended) The method of claim 1, further comprising determining [the] amino acid sequences [of] which comprise the identified peptide.

19. (Currently Amended) The method of claim 1, further comprising determining [the] nucleotide sequences ~~of a phage nucleotide that~~ which encode[s] the identified peptide.

20. (Withdrawn) An isolated peptide or polypeptide comprising at least two peptide units, wherein each peptide unit specifically binds a target geometrical shape, and wherein the isolated peptide or polypeptide is a recombinant peptide or polypeptide.

21. (Withdrawn) An isolated peptide or polypeptide according to claim 20, wherein the at least two peptide units are linked by a linkage other than a peptide bond.

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22. (Withdrawn) An isolated peptide or polypeptide according to claim 20, wherein the peptide further comprises a nanocode.
23. (Withdrawn) An isolated peptide or polypeptide according to claim 20, wherein at least two of the at least two peptide units comprise a different amino acid sequence.
24. (Withdrawn) An isolated peptide or polypeptide according to claim 20, wherein at least one of the at least two peptide units is identified according to the method of claim 1.
25. (Withdrawn) A scanning probe microscopy (SPM) substrate, comprising a substrate comprising an SPM material, wherein the substrate has a flat surface comprising an isolated peptide or polypeptide bound thereto.
26. (Withdrawn) The SPM substrate of claim 25, wherein the SPM material comprises graphite.
27. (Withdrawn) The SPM substrate of claim 25, wherein the isolated peptide or polypeptide is associated with a biomolecule.
28. (Withdrawn) The SPM substrate of claim 25, wherein the peptide is identified according to the method of claim 1.
29. (Withdrawn) A graphite or carbide electrode having a flat surface or a smooth, curved surface, wherein a peptide is specifically bound to the surface.
30. (Withdrawn) The graphite or carbide electrode of claim 29, wherein the peptide consists essentially of between about 7 and 20 amino acids.

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31. (Withdrawn) The graphite or carbide electrode of claim 29, wherein the peptide is isolated according to the method of claim 1.

32. (New) A method for identifying a peptide that binds to a surface having a target geometrical shape, comprising:

a) contacting a first solid surface comprising a self-assembled surfactant monolayer and comprising a first geometrical shape with a phage display library under reaction conditions, wherein the phage express an exogenous peptide;

b) contacting a second solid surface comprising the self-assembled surfactant monolayer and comprising a second geometrical shape with phage that do not bind to the first surface, wherein phage that bind to the second surface are re-contacted with the first surface;

c) repeating step (b); and

d) identifying a peptide that binds to the second surface and not the first surface, wherein the peptide of step (d) discriminates between the surfactant monolayer and the first and second geometrical shape.

33. (New) The method of claim 32, wherein the geometrical shape of the first surface is a flat surface and the geometrical shape of the second surface is smooth or curved.

34. (New) The method of claim 32, wherein the geometrical shape of the first surface is smooth or curved and the geometrical shape of the second surface is flat.

35. (New) The method of claim 32, wherein at least one of the first or second surfaces is hydrophobic.

36. (New) The method of claim 32, wherein at least one of the first or second surfaces comprises Teflon.